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March 16, 2011

Kirk Rosenberger
Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155-4029

**Re: 2010 Wild Rice Report
Mesabi Nugget Phase II Project**

Dear Mr. Rosenberger,

On behalf of Mesabi Mining, LLC, enclosed is the 2010 Wild Rice Survey and Sulfate Monitoring. The purpose of this report is to determine the location of wild rice (*Zizania palustris* L.) stands downstream from the Project for which surveys were not carried out in 2009. The Study Area includes the St. Louis River from its confluence with the Partridge River to the Fond du Lac Dam and Second Creek from just south of the Tailings Basin to the start of the 2009 survey. This report is being submitted at the request of the MPCA to aid in the EIS and NPDES permitting and represents the final wild rice report to be submitted as part of the Phase II Project.

Please address any questions and comments directly to Keith Hanson at 218-529-8222 or via email at khanson@barr.com.

Sincerely,

A handwritten signature in black ink that reads "Keith E. Hanson".

Keith E. Hanson
Senior Consultant

Enclosure

c: Jon Ahlness, USACE

2010 Wild Rice Survey and Sulfate Monitoring

St. Louis River and Second Creek

Mesabi Nugget Phase II Project

***Prepared for
Mesabi Mining, LLC***

March 2011



2010 Wild Rice Survey and Sulfate Monitoring St. Louis River and Second Creek

March 2011

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1.0 Summary of Findings

The purpose of this report is to determine the location of wild rice (*Zizania palustris* L.) stands downstream from the Project for which surveys were not carried out in 2009. The Study Area includes the St. Louis River from its confluence with the Partridge River to the Fond du Lac Dam and Second Creek from just south of the Tailings Basin (A) to the start of the 2009 survey (downstream of B).

The results from the 2010 ground surveys identified the presence of wild rice along the St. Louis River downstream of its confluence with the Partridge River (Figure 1). The sulfate level of the water sample taken in the location where rice was densest (density factor 2) was 113 mg/L (Table 1-1). Several sparse stands of wild rice (density factor 1) were identified approximately 500 and 1000 feet, respectively, downstream of Highway 100. Sulfate levels along the St. Louis River ranged from 29.6 to 113 mg/L.

Table 1-1 Sulfate Concentrations along the St. Louis River

Map Location	Sample Name	Sulfate Concentration (mg/L)
WS-1	PM-STL-KDM-01	113
WS-2	PM-STL-KDM-02	53.2
WS-3	PM-STL-KDM-03	49.4
WS-4	PM-STL-KDM-04	44.7
WS-5	PM-STL-KDM-05	47.4
WS-6	PM-STL-KDM-06	59.4
WS-7	MN-STL-MRB2-D	29.8
WS-8	MN-STL-MRB2-C	31.2
WS-9	MN-STL-MRB2-B	29.6

A small stand of wild rice was identified along Second Creek in 2009 and 2010 at its confluence with the Partridge River (Figure 2). The majority of Second Creek was surveyed in mid- September 2009. The remaining portion upstream from the 2009 survey was completed in 2010. Reported in 2009, the average sulfate concentration at Highway 110 (just downstream from Second Creek on the Partridge River) was 164 mg/L.

Additional monitoring data (not limited to sulfate concentrations and wild rice density) would be needed in order to begin assessing the effects of sulfate on wild rice growth and production and the

relative importance of other factors affecting wild rice density (e.g., hydrologic, weather, and ecological factors) (see Walker et al., 2010).

It is difficult to determine the health and history of wild rice in these waterbodies without a multi-year combined analysis of ground surveys as wild rice populations oscillate over an approximate 4- to 6- year period. Delays in plant nutrient uptake and wild rice tissue chemistry influence wild rice growth and production from year to year (Walker et al., 2006; Walker et al., 2010). Other factors such as water level, parasites, herbivory, and weather conditions may also play a role, but no data has been collected over multiple years and published. Given that wild rice populations fluctuate over a multiple year time period, studies carried out over a shorter time period may not provide sufficient data to begin to determine the factors affecting the growth and production of wild rice. Studies carried out over too short a time period also make it difficult to determine the relative importance of sulfate compared to other factors on wild rice growth and production.

2.0 Background

The purpose of this report is to provide information in response to the Minnesota Pollution Control Agency's (MPCA) "Wild Rice Information Request" on May 28, 2009 with regard to the Mesabi Mining, LLC (Referred to as Mesabi Nugget) Phase II Project (Project) (see "2009 Wild Rice Survey and Sulfate Monitoring" report prepared for Mesabi Mining).

The MPCA requested the following information:

- A literature review to identify water bodies which could potentially support wild rice downstream from the Project. As a result of this literature review, an analysis of historic infra-red USGS photographs for the presence of wild rice in water bodies downstream from the Project was determined to be beneficial;
- Consultation with Bands of Chippewa and the 1854 Treaty Authority;
- A ground survey of wild rice presence and density;
- Information on current sulfate concentrations in the bodies of water where wild rice was identified.

In 2009, as part of consultation with the Bands of Chippewa (Bands), Mesabi Mining contacted representatives from Bois Forte Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Grand Portage Band of Lake Superior Chippewa, and the 1854 Treaty Authority. Representatives from these bands and the 1854 Treaty Authority provided feedback in 2009. Water bodies that were not sampled in 2009, but which were thought to be potential discharge waters downstream from the Project, were sampled in 2010. These included the entire reach of the St. Louis River from its confluence with the Partridge River and a portion of Second Creek not sampled in 2009.

Historic and current infra-red USGS photographs were not analyzed in 2010. Based on results from 2009, the USGS photographs did not provide accurate information regarding the presence or density of wild rice. Therefore this analysis was not included in 2010.

3.0 Wild Rice Survey

The purpose of the Wild Rice Survey is to determine the presence and density of wild rice (*Zizania palustris* L, known as *Manoomin* in Ojibwe), an annual grass, on the St. Louis River downstream from its confluence with the Partridge River and on Second Creek (Figures 1 and 2). Since wild rice populations oscillate over an approximate 4 - to 6- year period, the following analyses and ground surveys were performed to determine past and current presence of wild rice:

- Literature review to identify water bodies which could potentially support wild rice downstream from the Project and
- On-the-ground verification of the presence and density of select wild rice stands.

3.1 Wild Rice Survey Methodology

The following section describes the methodologies used in obtaining information and data on wild rice.

3.1.1 Methodology of Literature Review for Wild Rice in Downstream Receiving Waters from the Project

To determine which water bodies downstream of the Project might potentially have wild rice, a literature review of historic and cultural information was conducted in 2009 and 2010. Information examined includes the 2008 DNR “Natural Wild Rice in Minnesota” Report, U.S. Department of Interior Geological Survey maps (Topographic maps), personal communication with the 1854 Treaty Authority, and the 2010 Wild Rice Management Workgroup’s “350 Significant Wild Rice Waters in Minnesota.” The Wild Rice Management Workgroup is a coalition of federal, state, tribal resource managers and other wild rice stakeholders. The list is periodically updated and was last updated May 4, 2010 (Appendix B).

3.1.2 Methodology of Ground Verification and Density/Acreage Calculations

Surveys to estimate wild rice density and crop acreage were carried out in July, August, and September 2010. The same methods described in the “2009 Wild Rice Survey and Sulfate Monitoring” report for Mesabi Mining were followed in 2010. Table 3-1 provides information regarding the wild rice density classification and percent coverage.

Table 3-1 Wild Rice Density Scale

Wild Rice Density Classification	Description
1	<10% Wild Rice Coverage
2	10 – 25 % Wild Rive Coverage
3	25 – 50 % Wild Rice Coverage
4	50 – 75% Wild Rice Coverage
5	>75% Wild Rice Coverage

3.2 Wild Rice Survey Results

The following sections present the results of the wild rice literature review and survey for the Study Area. Ground surveys along the St. Louis River were carried out from July 26 – 30, 2010 and from August 24-27, 2010. A ground survey of Second Creek downstream of B (see Figure 2) was carried out in mid– September 2009 and upstream of B on September 9, 2010.

3.2.1 Results of 2009 Literature Review

Below is an examination of the literature regarding the potential presence of wild rice along the St. Louis River. According to Minnesota Rules Chapter 7050.0470 , sections of the St Louis River upstream of the Study Area are classified as wild rice waters. While no wild rice was identified within the Study Area, a ground survey was carried out in order to determine from ground reconnaissance whether rice was present.

- Section 2.0, page 3 of the “2009 Wild Rice Survey and Sulfate Monitoring” report prepared for Mesabi Mining provides determination of the Study Area as a result of consultation with Bois Forte Band of Chippewa, Fond du Lac Band of Lake Superior Chippewa, Grand Portage Band of Lake Superior Chippewa, and the 1854 Treaty Authority (Barr, 2009).

“.... Feedback was received from 1854 Authority’s Darren Vogt on July 10, 2009 confirming that Mesabi Mining proposed study area included water bodies with potential for the presence of wild rice stands. Mr. Vogt mentioned the St. Louis River, including several sites upstream from its confluence with the Partridge River. After a follow-up phone call, Mr. Vogt agreed that those sites were outside the scope of waters potentially affected by discharge waters. Mr. Vogt also sent Mesabi Mining a picture of wild rice stands near Highway 110 on the Partridge River dated July 29, 2009. Three grid density calculations were made in that location. After follow up emails and phone calls to representatives of the three bands, they said that they did not have any additional input beyond what Mr. Vogt provided.”

- The 2010 Wild Rice Management Workgroup's "350 Significant Wild Rice Waters in Minnesota" identifies several reaches of the headwaters of the St. Louis River as historically supporting wild rice (similar to information provided by Darren Vogt in personal communication above). It does not, however, mention reaches of the river within the Study Area.
- Page 104 of the MnDNR *Investigational Report #69: A Biological Survey and Fishery Management plan for the Streams of the Saint Louis River Basin* (Moyle and Kenyon, 1947) includes discussion of the presence of wild rice in two rivers which flow into the St. Louis River. These rivers, however, are not part of the mainstem of the St. Louis River. The report reads: "Historic presence of wild rice in the St. Louis River Basin. #38. Zizania aquatica L., wild rice. – Rare in most of the streams; most common in the western portion of the [St. Louis] drainage basin. The most extensive stands are in the Floodwood and Swan River drainage basins."
- The MnDNR, Section of Fisheries "Completion Report: A Study of the St. Louis River" identified wild rice in three locations along the upper St. Louis River: downstream from Seven Beaver Lake at river miles 187 to 189, 176 and 165. Pages 25 – 27 include narrative description of its presence. Within the Habitat Assessment section, River Mile 188.7 it was noted, "...Wild rice was extensive and extended from the shore to a depth of three to four feet." At River Mile 171.0 it was noted, "Wild rice beds dominated this reach, with a deeper channel down the center, but no distinct shoreline ." These locations, however, were not within the Study Area.

3.2.2 Results of Ground Verification and Density/Acreage Calculations

Wild rice was identified from ground surveys performed on the St. Louis River just downstream of its confluence with the Partridge River. Wild rice was not identified along Second Creek (Figures 1 and 2). The densest stand of wild rice (density factor 2) was identified just upstream from Highway 100, with dimensions of approximately 15 feet x 80 feet (see photograph A-1). The stand was not dense enough, however, to carry out grid sampling. Several sparse stands of wild rice (density factor 1) were identified approximately 500 and 1000 feet respectively downstream of Highway 100 (Figure 1 and Photographs A-1, A-2, and A-3).

4.0 Sulfate Monitoring

Sulfate monitoring was carried out during wild rice surveying in 2010. This data is included in Table 1-1 and below along with data collected in from 2008 and 2009.

4.1 Sulfate Monitoring – 2009 and 2010 Data

Results of sulfate analyses performed on water samples collected during wild rice surveys are presented in Table 4-1. Nine water samples were collected along the St. Louis River in 2010. One sample was collected in the location where wild rice was found (WS -1) (Table 1-1). Additional sampling was carried out in locations comparable to locations sampled by Lindgren et al. 2006.

Table 4-1 Comparison of Sulfate Concentrations and Water Depth at Wild Rice Stands in 2009 and 2010¹

Water Body	# Samples	Sulfate Concentration (mg/L)			Water Depth (in)
		Mean	Std. Dev.	Range	Mean
St. Louis River 2010	9	50.9	25.7	29.6 - 113	14
Pokegama Bay 2009	4	7.6	0.8	7.0 - 8.8	23
St. Louis River 2009	6	17.7	7.4	8.0 - 27.4	15

All water samples were analyzed for sulfate using an ion chromatography method (EPA 300.0). More detailed results of the 2009 data are included in the “2009 Wild Rice Survey and Sulfate Monitoring” report prepared for Mesabi Mining.

4.2 Sulfate Monitoring - Baseline Data

Sulfate concentrations have been measured at one location along the Partridge River at the Highway 110 bridge crossing (MNSW12) and one location on Second Creek just before its confluence with the Partridge River (MNSW8) since 2008 as part of an ongoing water quality monitoring program for the Mesabi Nugget Phase II Project (see Figure 1 of “2009 Wild Rice Survey and Sulfate Monitoring” report). An additional water quality monitoring station on the Partridge River just downstream of the Colby Lake outlet (MNSW14) was established in June 2009. Additional samples were taken at MNSW14 monthly from August to December 2009 and included in this report. These data are summarized in Table 4-2.

¹ Two water depths were measured at locations where wild rice was identified in 2010. The water depth for the St. Louis River 2010 is the mean of those two values.

Table 4-2 Sulfate Monitoring Data Partridge and Second Creek²

Monitoring Station	Water Body	Location	Monitoring Period	Average (mg/L)	Std. Dev. (mg/L)	Min. (mg/L)	Max. (mg/L)
MNSW14	Partridge River	Below Colby Lake outlet	June – December 2009	49.2	18.3	28.7	72.6
MNSW12	Partridge River	At Highway 110	May 2008 - August 2009	164	103	43.0	302
MNSW8	Second Creek	Near outlet to Partridge River	May 2008 - August 2009	474	111	269	624

As discussed in the “2009 Wild Rice Survey and Sulfate Monitoring” report , measured concentrations of sulfate in the Partridge River were greatest at the most downstream monitoring location (MNSW12), averaging 164 mg/L and ranging from 43.0 mg/L to 302 mg/L. For the same period of record (May 2008 to August 2009), sulfate concentrations in Second Creek averaged 474 mg/L and ranged from 269 mg/L to 624 mg/L.

More recent data from upstream of the Second Creek confluence (MNSW14, from June to December 2009) confirm that sulfate concentrations in the Partridge River above Second Creek are relatively low. For this period of record, sulfate concentrations downstream of the Colby Lake outlet averaged 49.2 mg/L and ranged from 28.7 mg/L to 72.6 mg/L.

² Additional sulfate data was collected monthly from September to December 2009 at MNSW14. The average, standard deviation, minimum, and maximum values were recalculated accordingly.

5.0 Wild Rice Summary

Results from 2010 ground surveys identified the presence of wild rice in three locations on the St. Louis River within several thousand feet of its confluence with the Partridge River. Wild rice beds upstream of the Partridge River confluence had a density factor of two (10 to 25%) . Wild rice beds downstream of the Partridge River were small and sparse, having a density factor of one (less than 10%). Wild rice was not found along the remaining reach of the St. Louis River (up to Fond du Lac Dam), nor along Second Creek. The sulfate concentration from one grab sample at the location of wild rice on the St. Louis was 113 mg/L. Sulfate concentrations downstream from that location to the Fond du Lac Dam ranged from 29.6 to 59.4 mg/L.

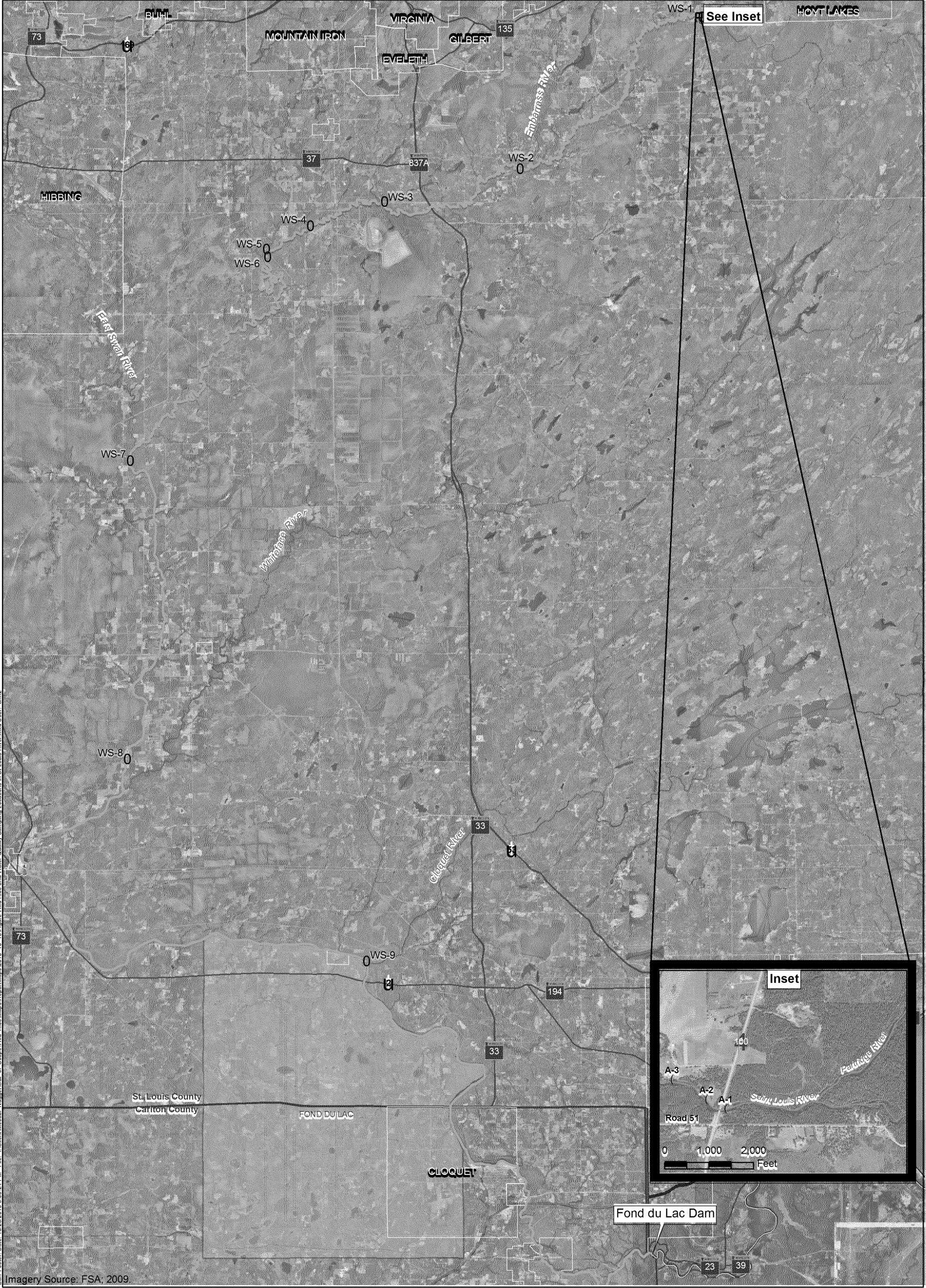
It is difficult to determine the health and history of wild rice in these water bodies without a multi-year combined analysis of ground surveys as wild rice populations oscillate over an approximate 4- to 6-year period. Delays in plant nutrient uptake and wild rice tissue chemistry influence wild rice growth and production from year to year (Walker et al., 2006; Walker et al., 2010). Other factors such as water level, parasites, herbivory, and weather conditions may also play a role, but no data has been collected over multiple years and published. Given that wild rice populations fluctuate over a multiple year time period, studies carried out over a shorter time period (one year) may not provide sufficient data to begin to determine the factors affecting the growth and production of wild rice . Studies carried out over too short a time period also make it difficult to determine the relative importance of sulfate compared to other factors on wild rice growth and production.

Additional monitoring data (not limited to sulfate concentrations and wild rice density) would be needed in order to begin assessing the effects of sulfate on wild rice growth and production. Such monitoring data should include analysis of other water and sediment anion and cation concentrations, plant and seed biomass and plant nutrient content, to name several of the most commonly measured. Such data is also important in order to determine the effects of sulfate relative to other factors on the growth and production of wild rice.

References

- 1854 Treaty Authority. 2008. Wild Rice Monitoring and Abundance in the 1854 Ceded Territory (1998 - 2008).
- Minnesota Department of Natural Resources. 1947. *Investigational Report #69: A Biological Survey and Fishery Management plan for the Streams of the Saint Louis River Basin* (Moyle and Kenyon, 1947).
- Minnesota Department of Natural Resources. 2006. *Section of Fisheries: Completion Report: A Study of the St. Louis River* (Lindgren et al. 2006).
- Minnesota Department of Natural Resources. 2008. *Natural Wild Rice In Minnesota: A Wild Rice Study* document submitted to the Minnesota Legislature by the Minnesota Department of Natural Resources February 15, 2008
- Walker, R.D., Pastor, J., Dewey, B.W. 2006. "Effects of wild rice (*Zizania Palustris* L.) straw on biomass and seed production in northern Minnesota." *Canadian Journal of Botany*, 84, (1): 1019-1024.
- Walker, R.D., Pastor, J., Dewey, B.W. 2010. "Litter Quantity and Nitrogen Immobilization Cause Oscillations in Productivity of Wild Rice (*Zizania palustris* L.) in Northern Minnesota." *Ecosystems*, 13: 485-498.

Figures



Bar Footer Date: 10/26/2010 3:00:24 PM File: I:\Client\Mesabi Nugget\Out of Scope\Wild Rice\Maps\Report\Maps\10_15\Figure Wild Rice and Water Quality Sampling Locations in St Louis River.mxd User: am2

2010 Study Area

Water Sample Collection Location

Wild Rice Density

1 <10% Wild Rice Coverage

2 10-25% Wild Rice Coverage

A-1 Photo Name

Reservation Boundary

City Boundary

County Boundary

Miles

Figure 1
WILD RICE AND SULFATE SAMPLING
LOCATIONS FOR THE ST. LOUIS RIVER
Mesabi Nugget Phase II
Hoyt Lakes, Minnesota



- A-4 Photo Location
- 2010 Wild Rice Density
 - (1 <10% Wild Rice Coverage
- Water Quality Sampling Locations
- 2009 Study Area
- 2010 Study Area
- Streams
- Stream Channel

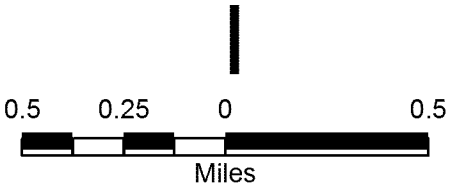


Figure 2
WILD RICE AND SULFATE SAMPLING
LOCATIONS FOR SECOND CREEK
Mesabi Nugget Phase II
Hoyt Lakes, Minnesota

Appendices

Appendix A

Photographs of Wild Rice for the Study Area



Figure A-1 St. Louis River, July 26, 2010



Figure A-2 St. Louis River, July 28, 2010



Figure A-3 **St. Louis River, July 28, 2010**



Figure A-4 **Second Creek, September 9, 2010**

Appendix B

2010 Wild Rice Management Workgroup's "350 Significant Wild Rice Waters in Minnesota"

350 Significant Wild Rice Waters in Minnesota

This is a list of 350 of the most important wild rice waters in Minnesota based on harvest, ecological, and/or cultural and historical values.

Please note that all waters supporting wild rice are important, and a complete inventory of these waters in Minnesota is also maintained. The complete list of wild rice waters should be consulted when appropriate (considerations for zoning, surface water use, water quality and quantity, etc.).

This list was compiled by the Wild Rice Management Workgroup, a coalition of federal, state, and tribal resource managers and other wild rice stakeholders. This list may be updated in the future as needed by the Workgroup.

1st updated 5/4/2010

[illegible]

R5-2015-0101170000381

County	Water Name	Map No.	Acres	Depth	Flow	Notes	Water Coverage	Notes	Depth	Notes	Management	Notes	Notes	Notes	Notes	Notes	Notes
County	Water Name	Map No.	Acres	Depth	Flow	Notes	Water Coverage	Notes	Depth	Notes	Management	Notes	Notes	Notes	Notes	Notes	Notes
Cass	Drumbeater	11814500	376	5	11	MNDNR - Wildlife/RL	Practically no rice present.	LLR	poor	low	difficult	State Waterfowl Refuge.	BOR	NetOut			
Cass	Morse	11842400	92	1	5				low								
Cass	Portage	11847000	277	1	5												
Clearwater	Lower Rice	15013000	2,375	1,568	44	R-WE		WEIR	good	high	easy	Good regular producer	VC	NetOut			
Clearwater	Upper Rice	15055600	1,460	1,116	25 M	MNDNR - Wildlife/Net						Adjacent to Upper Pine Lake State WMA.	VC				
Clearwater	Pine	15014900	1,465	220		Red Lake Watershed District						Adjacent to Pine Lake State WMA.	VC	Double log			
Clearwater	Mud	15006100	294	103	17 M							Adjacent to Mud Lake State WMA. Potential for management, if					
Clearwater	Unnamed	15002100	150	45	M												
Clearwater	Nicoles	15007000	239	36	13 A	R-WE											
Clearwater	Sucker	15003000	90	14	7												
Clearwater	Clearwater River	1511			15												
Cook	Marsh	10048800	69														
Cook	Swamp River	10000100	165	153	1			1854	good	low	easy						
Cook	Northern Light	10008000	443	133		USFS		1854	fair	low	easy		WLM	C		State	State
Cook	Elbow	10056600	415	124	5			1854	fair	low	easy						
Cook	Rice	10043300	230	92	1			1854	fair	low	fair	1997-92 acres (40%), normally 20% as in 1998.				Federal	USFS - BWCA
Cook	Kelly	10047600	188	56				1854	poor		difficult	1997 data: very inconsistent in rice production - really sparse					
Cook	Morse	10048000	64	48				1854	poor	low	easy						
Cook	Faustville	10053000	593	42	2			1854	fair	low	easy						
Cook	Mark	10052000	140				can have good rice over most of lake, used by harvesters										
Cook	South Fowl	10054000	1,440				moderate to dense patches of rice										
Cook	North Fowl	10000000	1,020				moderate to dense patches of rice										
Crow Wing	Lower Dean	18018100	372	360	62 M	MNDNR - Wildlife	Wild rice can completely cover basin.		good	high	easy	Lake adjacent to Lower Dean State WMA.	BOR	NetOut		State	MNDNR - Waters
Crow Wing	Pierce	18008600	1,268	100	1.4	MNDNR - Waters	Wild rice located in NW bay, around shoreline.		fair	low	easy	Lake within Hekstad State WMA.	WLM	FC		County	MNDNR - Fisheries
Crow Wing	Duck	18017800	310	175	3 M	MNDNR - Wildlife	Wild rice can completely cover open water portion of basin.		fair	low	easy	Lake within Duck Lake State WMA.	WLM	VC		State	MNDNR - Wildlife
Crow Wing	Rice (Deerwood)	18008800	185	170	7 A	MNDNR - Wildlife	Wild rice densest in northern 2/3rds of basin, around shore		fair	moderate	easy	Lake within Hekstad State WMA.	BOR	C		County	County
Crow Wing	Rice (Hekstad WMA)	18005300	168	138	10 M	MNDNR - Wildlife/DU			fair	moderate	easy		WLM	FC		State	MNDNR - Fisheries
Crow Wing	Rice (Cock Lake)	18032700	181	124	M	MNDNR - Wildlife/DU	Wild rice can completely cover basin, open in the middle.		fair	low	fair		BOR	C		County	Co. DOT
Crow Wing	Upton	18031000	364	100	17		Wild rice located around east, north and outlet portion of b			low			7	FC		State	MNDNR - Waters
Crow Wing	Garden	18032000	262	100	1 M	MNDNR - Wildlife/DU	Wild rice densest along east shore and north bay.		poor	low	easy		BOR	C		County	Co. DOT
Crow Wing	Nelson	18016400	323	100			Wild rice located in west half of lake.		poor	low	fair		RA	NetOut			
Crow Wing	Hole-in-the-Day	18040200	217	90		MNDNR - Wildlife	Wild rice is densest in northern 2/3rds of basin.		fair	low	easy	Within City of Nissau wildlife refuge.	BOR	C		MNDOT	
Crow Wing	Rice (Patt's)	18031000	100	90			Wild rice can completely cover basin.		poor	low	difficult	Privately managed wild rice lake (Patt's).	BOR	NetOut			
Crow Wing	Unnamed (Lost Rice)	18022800	117	80	M	MNDNR - Wildlife	Wild rice can completely cover basin.		poor	low	difficult	Large, 6' beaver dam removed in 2006, scattered rice covering	BOR	NetOut			
Crow Wing	Dog	18010700	71	71	M	MNDNR - Wildlife	Wild rice is found throughout the lake area in stands of var		poor	low	easy	MNDNR designated Game Lake.	BOR	VC		County	Co. DOT
Crow Wing	Pine	18026100	391	60			Wild rice located along east shore, Pine River channel.						NA	BD			
Crow Wing	Mud	18032000	82	60			Wild rice can cover a majority of open water basin.			low							
Crow Wing	Rice (Blomberg's)	18012100	78	60			Wild rice was found throughout the open water area of the ba		fair	low	fair		RA	NetOut			
Crow Wing	Tony	18016200	152	55	1 M	MNDNR - Wildlife	Wild rice can cover a majority of open water portion of bas		fair	low	difficult	20+ lake, Pine flows into lake +30.	BOR	NetOut		Federal	USACE, Part of Pine River Res. System
Crow Wing	Upper Whitefish	18031000	7,969	50	31	USACE - Crosslake RA											
Crow Wing	Lower Mission	18024300	739	50	A	MNDNR - Wildlife	Wild rice density was scattered to moderate (2 to 3), and it						WLM	VC			
Crow Wing	Smith	18020800	486	49			Wild rice located in NW bay, west and east shorelines.							?			
Crow Wing	Rice Bad	18018700	50	47		MNDNR - Wildlife	Wild rice can completely cover basin.		fair	poor	low	difficult	BOR	NetOut			
Crow Wing	Loes	18018000	330	45	4 A	MNDNR - Wildlife	Wild rice located around outlet (NW) and inlet (SE).		poor	poor	low	easy	BOR	C		Twp	Twp
Crow Wing	Twentysix	18000800	169	42			Wild rice located along NW and SE shoreline.							?			
Crow Wing	Twin Island	18010600	85	42			Wild rice can cover a majority of open water basin.		poor	low	fair	History of 50 to 100% coverage in the 1950s & 60s.	RA	NetOut		Private	
Crow Wing	Whipple	18038700	345	40			Wild rice exists primarily in lower basin (Moberg's Slaw).										
Crow Wing	Arrowhead	18036600	285	40		USACE - Cross Lake RA	Wild rice is SE corner/outlet to Whitefish Lake and NE corne		poor	low	fair		WLM	VC		Federal	USACE, Part of Pine River Res. System
Crow Wing	Unnamed (Hokassippi R. Rice B)	180348500	166	40			Wild rice can completely cover open water portion of basin.										
Crow Wing	Mud	18031700	112	40	A	MNDNR - Wildlife	Wild rice located in western 2/3rds of basin.		poor	low	difficult		BOR	NetOut			
Crow Wing	Richdale	18017000	60	40	M	MNDNR - Wildlife	History of almost complete basin coverage, outlet structure										
Crow Wing	Little Five	18017400	135	30	6 M	MNDNR - Wildlife	History (1980s) of harvestable stands in NE & SW corners of l		poor	low	fair		BOR	NetOut			
Crow Wing	Dahler	18020400	277	28	12 M	MNDNR - Wildlife/DU	Wild rice located around shoreline.		poor	low	easy		BOR	FC			
Crow Wing	Gangle	18023100	107	11	6		Wild rice located around outlet (NW) and inlet (SE).		poor	low	fair		RA	NetOut			
Crow Wing	Middle Cullen	18037700	495	2	5		Wild rice along outlet and outlet river channel.										
Crow Wing	Mississippi River	1811		1	78							Brainard dam?					
Hubbard	Memph	29021100	1,710	200	7	Industrial-3M			fair	low	easy	1997	WLM	FC		Private	Industrial-3M
Hubbard	Fourth Crow Wing	29007900	523	130	7				fair	low	easy	level		FC		Unknown	
Hubbard	Hart	29006300	236	118	14					low	moderate	easy					
Hubbard	Garfield	29006100	984	90	5					low	easy						
Hubbard	Island	29025400	522	60	1	County	South bay.		poor	low	easy	1986 data: west arm	BOR	C		County	Co. DOT

